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EXAMINER	
MERED, HABTE	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/004,249	SEXTON ET AL.	
	Examiner	**Art Unit**	
	HABTE MERED	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _14 January 2008_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-31_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-31_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed on 1/14/2008 has been entered and fully considered.

Claims 1-31 are pending in the instant Application. The independent claims are Claims 1, 7, 14, 18, 21, and 29.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims **1, 2, 4-8, 10-22, 24-25, and 27-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel (US 6, 907, 243 B1), in view of Kondo (US 5, 748, 624) and Demjanenko et al (US Pub. No. 2002/0051501).

Regarding **claim 1**, Patel'243 discloses a method, comprising: receiving a call admission request from a mobile station at the edge of a cell **(See Figure 11 – The Figure describes a soft handoff and soft handoff occurs at the edge of a cell and soft handoff involves call admission request and resource allocation.)**;

and granting system resources to the mobile station based at least in part on a bandwidth requirement of the mobile station, wherein for a mobile station having a high bandwidth requirement, the mobile station is preferentially granted system resources, *as compared to another mobile station having a lower bandwidth requirement* **(See Figure 11 – mobile 580 with low bandwidth requirements has less preference than the high bandwidth mobiles 560 and 570 and see also Column 14:1-60. Namely,**

Patel'243 in Column 14, Lines 16-20 and 55-60 states unequivocally that system resources like bandwidth are granted based on the level of QoS the mobile is paying for and hence a mobile that has a high QoS is provided with more bandwidth over a mobile that has a low QoS using a bias system.), by being assigned a plurality of time slots per frame for forming one radio information block **(See Column 5:15-20 – the cellular system can be TDMA and it is well known that TDMA supports time frames with multiple blocks)**.

Patel'243 also teaches that a new connection request with high quality of service requiring higher bandwidth is granted more system resources such as the portion of the frame that is allocated for the uplink and downlink and uses a precedence modules **(See Figure 2, elements 32 and 34 control precedence modules that determine a bias factor that controls how much resource is allocated to a mobile** to determine and guarantee if more resources can be made available to the new connection requesting higher bandwidth **(Patel'243's system can be TDMA or CDMA, an if TDMA then bandwidth is allocated in terms of timeslots in the TDMA time frame defining the schedule for up and down link transmission in a cell)**.

Patel'243 however fails to expressly disclose a method where a mobile station, with a higher bandwidth requirement, requesting call admission is assigned a plurality of time slots per frame while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot.

However, the above mentioned claimed limitations are well known in the art as evidenced by Kondo'624. In particular, Kondo'624 discloses a method where a mobile

station, with a higher bandwidth requirement, requesting call admission **(Figure 5, step 500)** is assigned a plurality of time slots per frame **(Figure 5, steps 512 and 513)** while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot **(Figure 5, steps 510 and 511)**. **(See Column 3:34-55 and Column 6:25-45 and See Figure 5, steps 510, 511, 512, and 513. In Column 3:34-40 literally states the required limitation.)**

In view of the above, having the method of Patel'243 and then given the well established teaching of Kondo'624, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Kondo'624, since Kondo'624 clearly states in Column 1, in lines 58-64 mobile stations requiring higher bandwidth have higher transmission speed and need more time slots to transfer data in order to meet the quality service associated with the mobile stations.

Patel'243 discloses that various schemes of modulation can be used but fails to expressively disclose the modulation schemes are operated with a coding technique that employs an iterative decoding technique.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses the modulation schemes are operated with a coding technique that employs an iterative decoding technique **(See Paragraph 681; Demjanenko'501 teaches the received signal is demodulated and a decoded bit stream is produced by iteratively decoding the demodulated signal.)**

In view of the above, having the method of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Demjanenko'501, the motivation to modify Patel'243's method to incorporate iterative decoding technique, is to ensure that the extra coding gained by Turbo Codes is realized.

Regarding **claim 2,** Patel'243 teaches all aspects of the claimed invention as set forth in the rejection of claims 1 but fails to teach a method, wherein the mobile station is operated at a rate 3/4 16-QAM mobile station at a throughput of approximately K x 59.2 kbps, where K is the number of occupied time slots in the frame.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses that a mobile station is operated at a rate 3/4 16-QAM mobile station at a throughput of approximately K x 59.2 kbps, where K is the number of occupied time slots in the frame **(See Figures 19 and 61. See Paragraphs 289-304; Further Demjanenko discloses that in his system a maximum throughput of 6, 144 kbits can be achieved by far exceeding the Applicant's apparatus throughput. Data throughput is a function of SNR and channel characteristics (Gaussian or Raleigh) and the expected BER further constraints the system.)**.

In view of the above, having the method of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of

Patel'243 as taught by Demjanenko'501, the modification allows the benefit of using turbo codes that outperform all previously known coding schemes regardless of the targeted channel where the extra coding gain offered by these codes can be used to save bandwidth or reduce power requirements in the link budget.

Regarding **claim 4**, Patel'243 teaches all aspects of the claimed invention as set forth in the rejection of claim 1 but fails to teach a method, wherein the mobile station is operated at a rate 5/6 64-QAM mobile station at a throughput of approximately K x 98.667 Kbps, where K is the number of occupied time slots in the frame.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses that a mobile station is operated at a rate 5/6 64-QAM mobile station at a throughput of approximately K x 98.667 kbps, where K is the number of occupied time slots in the frame. **(See Figure 46. See Paragraphs 426-443; Further Demjanenko discloses that in his system a maximum throughput of 6, 144 kbits can be achieved by far exceeding the Applicant's apparatus throughput. Data throughput is a function of SNR and channel characteristics (Gaussian or Raleigh) and the expected BER further constraints the system.)**

In view of the above, having the method of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Demjanenko'501, the modification allows the benefit of using turbo codes that outperform all previously known coding schemes regardless of the

targeted channel where the extra coding gain offered by these codes can be used to save bandwidth or reduce power requirements in the link budget.

Regarding **claim 5**, Patel'243 teaches all aspects of the claimed invention as set forth in the rejection of claims1 but fails to teach a method wherein the modulation format is selected from one of GMSK, 8-PSK, rectangular 16 gray coded QAM, 64 gray coded QAM, and 32 cross-QAM.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses a method wherein the modulation format is selected from one of GMSK, 8-PSK, rectangular 16 gray coded QAM, 64 gray-coded QAM, and 32 cross-QAM **(See Paragraphs 2, 146, 349 and Figure 46 where Demjanenko'501 teaches the use of the different types of modulation format)**.

In view of the above, having the method of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Demjanenko'501 in order to incorporate the ability to select modulation format as discussed above, the motivation being to ensure that the extra coding gained by Turbo Codes is realized.

Regarding **claim 6**, Patel'243 discloses a method wherein the radio information block comprises four TDMA frames and occupies K slots per TDMA frame, wherein the radio information block size is equal to N=464.times.K.times.throughput bits, where the throughput is equal to the number of information bits per data symbol. **(Patel’243**

teaches that variable number of resources can be assigned to a user terminal. Patel supports TDMA and time frames contain any number of timeslots. Data throughput is a function of SNR and channel characteristics (Gaussian or Raleigh) and the expected BER further constraints the system.)

Regarding **claim 7**, Patel'243 discloses a cellular communications system, comprising: a plurality of mobile stations located within at least one cell **(See Figures 1 and 11)**; a base transceiver station (BTS) for servicing a plurality of mobile stations **(See Figure 1, elements 18)** located within at least one cell **(See Figure 1, element 12)**; a base station controller (BSC) coupled to the BTS **(Base Stations 14 in Figure 1 is controlled by the BSC/Gateway)**; and a Call Admission processor coupled to the BTS for receiving a call admission request from mobile stations located in the cell served by the BTS **(Figure 2, elements 48, 34, and 32)** shows, the processor granting cellular communications system resources to the mobile stations based at least in part on level of service required by the mobile Stations and on a location of the mobile stations within the cell, wherein for a mobile station having a high bandwidth requirement that is determined to be located at the edge of the cell **(See Columns 2:45-50, 3:29-40, 7:9-16, 7:60-67, 9:55-65, and 14:1-60. Namely, Patel'243 in Column 14, Lines 16-20 and 55-60 states unequivocally that system resources like bandwidth are granted based on the level of QoS the mobile is paying for and hence a mobile that has a high QoS is provided with more bandwidth over a mobile that has a low QoS using a bias system. Of course Figure 11 describes a soft handoff and the mobiles must be located at the edge of a cell.)**, the mobile station is

preferentially granted system resources by being assigned a plurality of time slots per frame for forming one radio information block **(See Column 5:15-20 – the cellular system can be TDMA and it is well known that TDMA supports time frames with multiple blocks)**.

Patel'243 however fails to expressly disclose a system where a mobile station, with a higher bandwidth requirement, requesting call admission is assigned a plurality of time slots per frame while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot.

However, the above mentioned claimed limitations are well known in the art as evidenced by Kondo'624. In particular, Kondo'624 discloses a system where a mobile station, with a higher bandwidth requirement, requesting call admission **(Figure 5, step 500)** is assigned a plurality of time slots per frame **(Figure 5, steps 512 and 513)** while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot **(Figure 5, steps 510 and 511)**. **(See Column 3:34-55 and Column 6:25-45 and See Figure 5, steps 510, 511, 512, and 513. In Column 3:34-40 literally states the required limitation.)**

In view of the above, having the system of Patel'243 and then given the well established teaching of Kondo'624, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Patel'243 as taught by Kondo'624, since Kondo'624 clearly states in Column 1, in lines 58-64 mobile stations requiring higher bandwidth have higher transmission speed and need more

time slots to transfer data in order to meet the quality service associated with the mobile stations.

Patel'243 discloses that various schemes of modulation can be used but fails to expressively disclose the modulation schemes are operated with a coding technique that employs an iterative decoding technique.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses the modulation schemes are operated with a coding technique that employs an iterative decoding technique **(See Paragraph 681; Demjanenko'501 teaches the received signal is demodulated and a decoded bit stream is produced by iteratively decoding the demodulated signal.)**

In view of the above, having the system of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Patel'243 as taught by Demjanenko'501, the motivation to modify Patel'243's system to incorporate iterative decoding technique, is to ensure that the extra coding gained by Turbo Codes is realized.

Regarding **claim 8**, it is noted that the limitations of claim 8 corresponds to that of claim 2 as discussed above, please see the Examiner's comments with respect to claim 2 as set forth in the rejection above.

Regarding **claim 10**, it is noted that the limitations of claim 10 corresponds to that of claim 4 as discussed above, please see the Examiner's comments with respect to claim 4 as set forth in the rejection above.

Regarding **claim 11**, it is noted that the limitations of claim 11 corresponds to that of claim 5 as discussed above, please see the Examiner's comments with respect to claim 5 as set forth in the rejection above.

Regarding **claim 12**, it is noted that the limitations of claim 12 corresponds to that of claim 6 as discussed above, please see the Examiner's comments with respect to claim 6 as set forth in the rejection above.

Regarding **claim 13**, Patel'243 discloses all aspects of the claimed invention as set forth in the rejection of claim 7 but fails to teach wherein the iterative coding technique comprises a turbo code, the turbo code being implemented with two n-state identical recursive systematic convolutional encoders (13_8,15_8) that are combined in parallel through a pseudo-random bit interleaver.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses a system wherein the iterative coding technique comprises a turbo code, the turbo code being implemented with two n-state identical recursive systematic convolutional encoders that are combined in parallel through a pseudo-random bit interleaver. **(See Figure 76 and Paragraph 667 and Demjanenko'501 teaches in detail all aspects of the claimed limitation with respect to the iterative coding technique that comprises a turbo code)**

In view of the above, having the system of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Patel'243 as taught by Demjanenko'501 in order to incorporate the ability to select modulation format as discussed above, the motivation being to ensure that the extra coding gained by Turbo Codes is realized.

Regarding **claim 14**, Patel'243 discloses a method comprising: receiving a call admission request from a mobile station **(See Figure 11 – The Figure describes a soft handoff and soft handoff occurs at the edge of a cell and soft handoff involves call admission request and resource allocation. Also see Figure 4 step 200 showing such a request)**;

and granting system resources to the mobile station based at least in part on a bandwidth requirement of the mobile station and on location of the mobile station within the cell, wherein for a mobile station having a high bandwidth requirement that is located at the cell edge **(Figure 11 describes soft handoff and soft handoff occurs at the edge of a cell and soft handoff involves call admission request and resource allocation)**,

the mobile station is preferentially granted system resources, as compared to another mobile station having a lower bandwidth requirement **(See Figure 11 – mobile 580 with low bandwidth requirements has less preference than the high bandwidth mobiles 560 and 570 and see also Column 14:1-60. Namely, Patel'243 in Column 14, Lines 16-20 and 55-60 states unequivocally that system resources**

like bandwidth are granted based on the level of QoS the mobile is paying for and hence a mobile that has a high QoS is provided with more bandwidth over a mobile that has a low QoS using a bias system.), by being assigned a plurality of time slots per frame for forming one radio information block **(See Column 5:15-20 – the cellular system can be TDMA and it is well known that TDMA supports time frames with multiple blocks)**,

and monitoring changes in the location and the system resource requirements of the mobile station and varying the granted system resources accordingly **(Patel'243 in Column 14:1-60 discusses if QoS changes the amount of system resources allocated changes and in Figure 2 element 32 does monitoring and collecting data using different modules including changes in location and adjusting system requirements. This is further illustrated in Figure 4, steps 202 and 204).**

Patel'243 however fails to expressly disclose a method where a mobile station, with a higher bandwidth requirement, requesting call admission is assigned a plurality of time slots per frame while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot.

However, the above mentioned claimed limitations are well known in the art as evidenced by Kondo'624. In particular, Kondo'624 discloses a method where a mobile station, with a higher bandwidth requirement, requesting call admission **(Figure 5, step 500)** is assigned a plurality of time slots per frame **(Figure 5, steps 512 and 513)** while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot **(Figure 5, steps 510 and 511)**. **(See Column 3:34-55 and**

Column 6:25-45 and See Figure 5, steps 510, 511, 512, and 513. In Column 3:34-40 literally states the required limitation.)

In view of the above, having the method of Patel'243 and then given the well established teaching of Kondo'624, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Kondo'624, since Kondo'624 clearly states in Column 1, in lines 58-64 mobile stations requiring higher bandwidth have higher transmission speed and need more time slots to transfer data in order to meet the quality service associated with the mobile stations.

Patel'243 discloses that various schemes of modulation can be used but fails to expressively disclose the modulation schemes are operated with a coding technique that employs an iterative decoding technique.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses the modulation schemes are operated with a coding technique that employs an iterative decoding technique **(See Paragraph 681; Demjanenko'501 teaches the received signal is demodulated and a decoded bit stream is produced by iteratively decoding the demodulated signal.)**

In view of the above, having the method of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Demjanenko'501, the motivation to modify Patel'243's method to

incorporate iterative decoding technique, is to ensure that the extra coding gained by Turbo Codes is realized.

Regarding **claim 15**, it is noted that the limitations of claim 15 corresponds to that of claim 5 as discussed above, please see the Examiner’s comments with respect to claim 5 as set forth in the rejection above.

Regarding **claim 16**, it is noted that the limitations of claim 16 corresponds to that of claim 6 as discussed above, please see the Examiner’s comments with respect to claim 6 as set forth in the rejection above.

Regarding **claim 17**, it is noted that the limitations of claim 17 corresponds to that of claim 13 as discussed above, please see the Examiner’s comments with respect to claim 13 as set forth in the rejection above.

Regarding **claim 18**, Patel’243 discloses a method, comprising: receiving a call admission request from a mobile station located in a cell **(See Figure 11 – The Figure describes a soft handoff and soft handoff occurs at the edge of a cell and soft handoff involves call admission request and resource allocation.)**;

and granting system resources to the mobile station based at least in part on a bandwidth requirement of the mobile station, wherein for a mobile station having a high bandwidth requirement, the mobile station is preferentially granted system resources, *as compared to another mobile station having a lower bandwidth requirement* **(See Figure 11 – mobile 580 with low bandwidth requirements has less preference than the high bandwidth mobiles 560 and 570 and see also Column 14:1-60. Namely, Patel'243 in Column 14, Lines 16-20 and 55-60 states unequivocally that system**

resources like bandwidth are granted based on the level of QoS the mobile is paying for and hence a mobile that has a high QoS is provided with more bandwidth over a mobile that has a low QoS using a bias system.), by being assigned a plurality of time slots per frame for forming one radio information block **(See Column 5:15-20 – the cellular system can be TDMA and it is well known that TDMA supports time frames with multiple blocks)**.

Patel'243 also teaches that a new connection request with high quality of service requiring higher bandwidth is granted more system resources such as the portion of the frame that is allocated for the uplink and downlink and uses a precedence modules **(See Figure 2, elements 32 and 34 control precedence modules that determine a bias factor that controls how much resource is allocated to a mobile** to determine and guarantee if more resources can be made available to the new connection requesting higher bandwidth **(Patel'243's system can be TDMA or CDMA, an if TDMA then bandwidth is allocated in terms of timeslots in the TDMA time frame defining the schedule for up and down link transmission in a cell)**.

Patel'243 however fails to expressly disclose a method where a mobile station, with a higher bandwidth requirement, requesting call admission is assigned a plurality of time slots per frame while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot.

However, the above mentioned claimed limitations are well known in the art as evidenced by Kondo'624. In particular, Kondo'624 discloses a method where a mobile station, with a higher bandwidth requirement, requesting call admission **(Figure 5, step**

500) is assigned a plurality of time slots per frame **(Figure 5, steps 512 and 513)** while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot **(Figure 5, steps 510 and 511)**. **(See Column 3:34-55 and Column 6:25-45 and See Figure 5, steps 510, 511, 512, and 513. In Column 3:34-40 literally states the required limitation.)**

In view of the above, having the method of Patel'243 and then given the well established teaching of Kondo'624, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Kondo'624, since Kondo'624 clearly states in Column 1, in lines 58-64 mobile stations requiring higher bandwidth have higher transmission speed and need more time slots to transfer data in order to meet the quality service associated with the mobile stations.

Patel'243 discloses that various schemes of modulation can be used but fails to expressively disclose the modulation schemes are operated with a coding technique that employs an iterative decoding technique.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses disclose the modulation schemes are operated with a coding technique that employs an iterative decoding technique **(See Paragraph 681; Demjanenko'501 teaches the received signal is demodulated and a decoded bit stream is produced by iteratively decoding the demodulated signal.)**

In view of the above, having the method of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Demjanenko'501, the motivation to modify Patel'243's method to incorporate iterative decoding technique, is to ensure that the extra coding gained by Turbo Codes is realized.

Regarding **claim 19**, Patel'243 discloses a method, wherein the mobile station is located at the cell edge, and further comprising adjusting the granted system resources as the mobile station changes its location within the cell **(See Figure 11 – The Figure describes a soft handoff and soft handoff occurs at the edge of a cell and soft handoff involves call admission request and resource allocation)**, and retaining the granted system resources as the mobile station transitions to an edge of another cell **(See Column 14:1-60 – the mobiles keep the granted resources based on the bias level associated with mobile in the cell)**.

Regarding **claim 20**, Patel'243 teaches all aspects of the claimed invention as set forth in the rejection of claim 18 but fails to teach a method wherein the iterative decoding technique uses a turbo code.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses a method wherein the iterative decoding technique uses a turbo code. **(See Paragraphs 664, 667, 674, and 681. Demjanenko discloses a turbo decoder that uses iterative decoding technique.)**

In view of the above, having the method of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Demjanenko'501 in order to incorporate the ability to select modulation format as discussed above, the motivation being to ensure that the extra coding gained by Turbo Codes is realized.

Regarding **claim 21**, Patel'243 discloses a control unit **(Figure 2, elements 32, 34, and 48)** coupled to a wireless transceiver in a cellular communication network, comprising a resource granting unit that is responsive to receiving a call admission request **(Figure 2, element 34)** from a mobile station located near a cell edge **(See Figure 11 – The Figure describes a soft handoff and soft handoff occurs at the edge of a cell and soft handoff involves call admission request and resource allocation.)** to grant system resources to the mobile station based at least in part on a bandwidth requirement of the mobile station, where for a mobile station having a high bandwidth requirement the resource granting unit preferentially grants system resources **(Column 14:1-60 and See Figure 11 – mobile 580 with low bandwidth requirements has less preference than the high bandwidth mobiles 560 and 570)** , as compared to another mobile station requesting call admission and having a lower bandwidth requirement **(Namely, Patel'243 in Column 14, Lines 16-20 and 55-60 states unequivocally that system resources like bandwidth are granted based on the level of QoS the mobile is paying for and hence a mobile that has a high QoS**

is provided with more bandwidth over a mobile that has a low QoS using a bias system).

Patel'243 also teaches that a new connection request with high quality of service requiring higher bandwidth is granted more system resources such as the portion of the frame that is allocated for the uplink and downlink and uses a precedence modules **(See Figure 2, elements 32 and 34 control precedence modules that determine a bias factor that controls how much resource is allocated to a mobile** to determine and guarantee if more resources can be made available to the new connection requesting higher bandwidth **(Patel'243's system can be TDMA or CDMA, an if TDMA then bandwidth is allocated in terms of timeslots in the TDMA time frame defining the schedule for up and down link transmission in a cell)**.

Patel'243 however fails to expressly disclose a control unit that uses a method where a mobile station, with a higher bandwidth requirement, requesting call admission is assigned a plurality of time slots per frame while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot.

However, the above mentioned claimed limitations are well known in the art as evidenced by Kondo'624. In particular, Kondo'624 discloses a control unit **(Figure 3, element 30)** that uses a method where a mobile station, with a higher bandwidth requirement, requesting call admission **(Figure 5, step 500)** is assigned a plurality of time slots per frame **(Figure 5, steps 512 and 513)** while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot **(Figure 5, steps 510 and 511)**. **(See Column 3:34-55 and Column 6:25-45 and See Figure 5,**

steps 510, 511, 512, and 513. In Column 3:34-40 literally states the required limitation.)

In view of the above, having the control unit of Patel'243 and then given the well established teaching of Kondo'624, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the control unit of Patel'243 as taught by Kondo'624, since Kondo'624 clearly states in Column 1, in lines 58-64 that mobile stations requiring higher bandwidth have higher transmission speed and need more time slots to transfer data in order to meet the quality service associated with the mobile stations.

Patel'243 discloses that various schemes of modulation can be used but fails to expressively disclose the modulation schemes are operated with a coding technique that employs an iterative decoding technique.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses the modulation schemes are operated with a coding technique that employs an iterative decoding technique **(See Paragraph 681; Demjanenko'501 teaches the received signal is demodulated and a decoded bit stream is produced by iteratively decoding the demodulated signal.)**

In view of the above, having the control unit of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the control unit of Patel'243 as taught by Demjanenko'501, the motivation to modify Patel'243's control

unit to incorporate iterative decoding technique, is to ensure that the extra coding gained by Turbo Codes is realized.

Regarding **claim 22**, it is noted that the limitations of claim 22 corresponds to that of claim 2 as discussed above, please see the Examiner's comments with respect to claim 2 as set forth in the rejection above.

Regarding **claim 24**, it is noted that the limitations of claim 24 corresponds to that of claim 4 as discussed above, please see the Examiner's comments with respect to claim 4 as set forth in the rejection above.

Regarding **claim 25**, it is noted that the limitations of claim 25 corresponds to that of claim 5 as discussed above, please see the Examiner's comments with respect to claim 5 as set forth in the rejection above.

Regarding **claim 26**, it is noted that the limitations of claim 26 corresponds to that of claim 6 as discussed above, please see the Examiner's comments with respect to claim 6 as set forth in the rejection above.

Regarding **claim 27**, it is noted that the limitations of claim 27 corresponds to that of claim 13 as discussed above, please see the Examiner's comments with respect to claim 13 as set forth in the rejection above.

Regarding **claim 28**, it is noted that the limitations of claim 28 corresponds to that of claim 17 as discussed above, please see the Examiner's comments with respect to claim 17 as set forth in the rejection above.

Regarding **claim 29**, Patel'243 discloses an apparatus **(Figure 2 shows a mobile gateway 30 responsible for granting bandwidth in wireless network 10 of**

Figure 1 and is shown as element 20 in Figure 1 and is further illustrated in Column 5, Lines 50-55) for granting system access to mobile stations, comprising: means for receiving a call admission request from a mobile station at the edge of a cell **(See Figure 11 – The Figure describes a soft handoff and soft handoff occurs at the edge of a cell and soft handoff involves call admission request and resource allocation. Also in each of the cells there are base stations or servers communicating with the gateway 20 of Figure 1 as further illustrated in Column 7, Lines 60-67 and Column 8, Lines 1-5. The receiving means of the gateway 20 of Figure 1 are elements 38 and 39)**;

and means for granting system resources to the mobile station **(Figure 2, element 36 grants bandwidth)** based at least in part on a bandwidth requirement of the mobile station, wherein for a mobile station having a high bandwidth requirement, the mobile station is preferentially granted system resources, *as compared to another mobile station having a lower bandwidth requirement* **(See Figure 11 – mobile 580 with low bandwidth requirements has less preference than the high bandwidth mobiles 560 and 570 and see also Column 14:1-60. Namely, Patel'243 in Column 14, Lines 16-20 and 55-60 states unequivocally that system resources like bandwidth are granted based on the level of QoS the mobile is paying for and hence a mobile that has a high QoS is provided with more bandwidth over a mobile that has a low QoS using a bias system.),** by being assigned a plurality of time slots per frame for forming one radio information block **(See Column 5:15-20 – the**

cellular system can be TDMA and it is well known that TDMA supports time frames with multiple blocks).

Patel'243 also teaches that a new connection request with high quality of service requiring higher bandwidth is granted more system resources such as the portion of the frame that is allocated for the uplink and downlink and uses a precedence modules **(See Figure 2, elements 32 and 34 control precedence modules that determine a bias factor that controls how much resource is allocated to a mobile** to determine and guarantee if more resources can be made available to the new connection requesting higher bandwidth **(Patel'243's system can be TDMA or CDMA, an if TDMA then bandwidth is allocated in terms of timeslots in the TDMA time frame defining the schedule for up and down link transmission in a cell)**.

Patel'243 however fails to expressly disclose an apparatus where a mobile station, with a higher bandwidth requirement, requesting call admission is assigned a plurality of time slots per frame while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot.

However, the above mentioned claimed limitations are well known in the art as evidenced by Kondo'624. In particular, Kondo'624 discloses an apparatus where a mobile station, with a higher bandwidth requirement, requesting call admission **(Figure 5, step 500)** is assigned a plurality of time slots per frame **(Figure 5, steps 512 and 513)** while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot **(Figure 5, steps 510 and 511)**. **(See Column**

3:34-55 and Column 6:25-45 and See Figure 5, steps 510, 511, 512, and 513. In Column 3:34-40 literally states the required limitation.)

In view of the above, having the apparatus of Patel'243 and then given the well established teaching of Kondo'624, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the apparatus of Patel'243 as taught by Kondo'624, since Kondo'624 clearly states in Column 1, in lines 58-64 mobile stations requiring higher bandwidth have higher transmission speed and need more time slots to transfer data in order to meet the quality service associated with the mobile stations.

Patel'243 discloses that various schemes of modulation can be used but fails to expressively disclose the modulation schemes are operated with a coding technique that employs an iterative decoding technique.

However, the above mentioned claimed limitations are well known in the art as evidenced by Demjanenko'501. In particular, Demjanenko'501 discloses the modulation schemes are operated with a coding technique that employs an iterative decoding technique **(See Paragraph 681; Demjanenko'501 teaches the received signal is demodulated and a decoded bit stream is produced by iteratively decoding the demodulated signal.)**

In view of the above, having the apparatus of Patel'243 and then given the well established teaching of Demjanenko'501, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Patel'243 as taught by Demjanenko'501, the motivation to modify Patel'243's method to

incorporate iterative decoding technique, is to ensure that the extra coding gained by Turbo Codes is realized.

Regarding **claim 30**, Patel'243 discloses an apparatus **(Figure 2, mobile gateway 30 also shown as element 20 in Figure 1)** where the means for receiving comprises a receiver **(Figure 2, elements 38 and 39)** and the means for granting system resources comprises the receiver coupled to a processor **(Figure 2, elements 38 and 39 are coupled to processor 36 as illustrated in Column 7, Lines 60-670)**.

Regarding **claim 31**, it is noted that the limitations of claim 31 corresponds to that of claim 29 as discussed above, please see the Examiner's comments with respect to claim 29 as set forth in the rejection above.

4. **Claims 3, 9, and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Patel'243 in view of Kondo'624 and Demjanenko'501 as applied to claims 1, 7, and 23 respectively above, and further in view of Raghavan et al (US Pub. No. 2003/0134607).

Regarding **claim 3**, the combination of Patel'243, Kondo'624 and Demjanenko'501, teaches all aspects of the claimed invention as set forth in the rejections of claim 1 but does not disclose a method, wherein the mobile station is operated as a rate 4/5 32-QAM mobile station at a throughput of approximately K.times.78.93 kbps, where K is the number of occupied time slots in the frame.

However, the above mentioned claimed limitations are well known in the art as evidenced by Raghavan’607. In particular, Raghavan’607 discloses a method, wherein the mobile station is operated as a rate 4/5 32-QAM mobile station at a throughput of approximately K.times.78.93 kbps, where K is the number of occupied time slots in the frame. **(See Paragraphs 24, 83, 85, and 114. Data throughput is a function of SNR and channel characteristics (Gaussian or Raleigh) and the expected BER further constraints the system.)**

In view of the above, having a method based on the combination of Patel'243, Kondo'624, and Demjanenko'501, and then given the well established teaching of Raghavan’607, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method based on the combination of Patel'243, Kondo'624, and Demjanenko'501as taught by Raghavan’607, the motivation for the modification being to use turbo codes that outperform all previously known coding schemes regardless of the targeted channel where the extra coding gain offered by these codes can be used to save bandwidth or reduce power requirements in the link budget.

Regarding **claim 9**, it is noted that the limitations of claim 9 corresponds to that of claim 3 as discussed above, please see the Examiner’s comments with respect to claim 3 as set forth in the rejection above.

Regarding **claim 23**, it is noted that the limitations of claim 23 corresponds to that of claim 3 as discussed above, please see the Examiner’s comments with respect to claim 3 as set forth in the rejection above.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patel'243 in view of Kondo'624 and Demjanenko'501 as applied to claim 21 above, and further in view of Leung et al (US 7, 124, 193).

Regarding **claim 26**, the combination of Patel'243, Kondo'624, and Demjanenko'501, teaches all aspects of the claimed invention as set forth in the rejections of claim 21 but does not disclose a control unit, wherein the radio information block comprises four TDMA frames and occupies K slots per TDMA frame, wherein the radio information block size is equal to N=464.times.K.times.throughput bits, where the throughput is equal to the number of information bits per data symbol.

However, the above mentioned claimed limitations are well known in the art as **(Figure 1, elements 33 and 40)** evidenced by Leung'193. In particular, Leung'193 discloses a control unit, wherein the radio information block comprises four TDMA frames **(Column 4, Lines 50-54 shows a block occupying a timeslot of four TSDMA frames)** and occupies K slots per TDMA frame, wherein the radio information block size is equal to N=464.times.K.times.throughput bits, where the throughput is equal to the number of information bits per data symbol **(Leung'193 shows the Edge block is formed from 4 TDMA frames in Column 4, Lines 46-60).**

In view of the above, having a control unit using the method based on the combination of Patel'243, Kondo'624, and Demjanenko'501, and then given the well established teaching of Leung'193, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the control unit using method based on the combination of Patel'243, Kondo'624, and Demjanenko'501as

taught by Leung’193, the motivation for the modification to use a radio information block comprising four TDMA frames that occupies K slots per TDMA frame is to implement the ubiquitous wireless packet network called EGPRS (Enhanced General Packet Radio Services) as stated in Leung’s Column 1:38-40.

Response to Arguments

5. Applicant's arguments filed 1/14/2008 have been fully considered but they are not persuasive.

In the Remarks, with respect to independent claim 1, Applicant argues that Patel'243 fails to teach the specific limitation requiring a mobile station having a high bandwidth requirement is preferentially granted system resources as compared to another mobile station requesting call admission and having a lower bandwidth requirement. Applicant attempts to refute all of the citations made by Examiner from Patel'243 by indicating QoS and Patel'243’s “bias" teaching has nothing to do with bandwidth requirement. Also Applicant argues in Patel'243’s Figure 11, all of the mobiles require 1 unit bandwidth, and therefore the mobiles fail to show having different bandwidth requirement.

Examiner respectfully disagrees. Patel'243 adequately teaches the specific limitation in question. Patel'243 effectively teaches in Column 14, Lines 14-25 that QoS is directly associated with bandwidth and mobiles with higher QoS are allocated higher

bandwidth and require higher bandwidth and mobiles with lower QoS are allocated lower bandwidth and require lower bandwidth. Patel'243 like the Applicant's assigns bias factor based on QoS which includes bandwidth requirement to give preferential treatment to devices that have higher bandwidth need as indicated by the device subscribing to premium service. In Column 14, Lines 55-60 and in Column 3, Lines 30-40 Patel'243 repeats the same fact.

Applicant's point of indicating that the mobiles shown in Patel'243's Figure 11 equally require 1 unit of bandwidth is not a concern at all because Patel'243 is precisely showing how fairness can be implemented using his bias teaching in that always the mobile with high QoS subscription is always preferentially granted more resources including higher bandwidth as indicated again in Column 14, Lines 56-60. The key concept Patel'243 is driving with Figure 11 is for different QoS there is different resources requirement including bandwidth and the bias or preferential scheme is shown in Figure 11 and is adequately illustrated in Column 14, Lines 36-45 and addresses the limitation in question. In Figure 11, the mobile with the highest QoS, irrespective of how much bandwidth is available by the system to grant or how much it needs for that specific moment, it is guaranteed to get a preferential treatment to get a line share of the resources because of the bias assigned. Of course, as Patel'243 points out subscribers of high QoS always need higher resources including bandwidth as indicated by Patel'243 in Column 14, Lines 55-60 and in Column 3, Lines 30-40 or else there will not be a need to incur high cost.

Applicant also argues with respect to independent claim 1 in the Remarks on page 13, that the secondary reference, Kondo'624, is in appropriate because the allocation of time slots to a new call is made independent of any other new call, let alone one requesting call admission.

Examiner respectfully disagrees. Examiner introduced Kondo'624 to teach a specific limitation which is to disclose a method where a mobile station, with a higher bandwidth requirement, requesting call admission is assigned a plurality of time slots per frame while a mobile station, with a lower bandwidth requirement, requesting call admission is assigned a single time slot. Examiner cited Kondo'624's Figure 5 to teach this limitation. Figure 5, step 500 indicates a request for a new call and is a request for call admission which clearly contradicts Applicant's position. Further in Figure 5, looking at step 510 and 512 there are two types of new calls – low and high speed calls – and as the limitation requires more time slot is always assigned to the high speed call.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following US Patents are cited to show the state of the art with respect to high-speed data transmission in a digital mobile communication system using multi-slot mobiles:

US Patent (6, 016, 311) to Gilbert et al

US Patent (6, 148, 209) to Hamalainen et al

The following US Patent Application Publications are cited to show the state of the art with respect to modulation techniques used in wireless communications:

US Pub. No. (2005/0002468) to Walton et al

US Pub. No. (2005/0053030) to Zehavi

US Pub. No. (2005/0097424) to Golitschek et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HABTE MERED whose telephone number is (571)272-6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Aung S. Moe can be reached on 571 272 7314. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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